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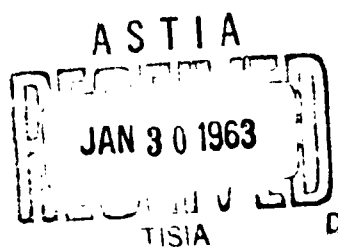
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FIVE-LENS OBJECTIVE WITH HIGH F NUMBER

By

M. D. Mal'tsev



295 446

## UNEDITED ROUGH DRAFT TRANSLATION

FIVE-LENS OBJECTIVE WITH HIGH F NUMBER

BY: M. D. Mal'tsev

English Pages: 4

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pp. 1-2

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FIVE-LENS OBJECTIVE WITH HIGH F NUMBER

Certain objectives with a relative aperture 1 : 2 covering a frame 24 x 36 mm, for example, of the type "Helios," "Jupiter," have a complicated design containing six lenses with cemented units which consume time in the making, consisting of three lenses.

The proposed high-f objective has a simpler design, which assures with five lenses just the same characteristics as with the known six-lens objectives.

The reduction in the number of parts and simplification in the design of the units makes it possible to increase the productivity of the work in the making and the assembling, and also to reduce the cost of the production of the objectives.

The five lenses of the objective are grouped in three components consisting: first, of one meniscus positive lens, and second and third, each of two lenses, one of which is positive and the other negative, and in this situation the negative lenses are turned towards the aperture diaphragm, placed between the second and third components.

Figs. 1 and 2 contain sketches of the arrangement of the objective, with relative aperture 1 : 2; 1 : 2.5, respectively.

The objective has five lenses grouped in three components, I, II, III.

Component I consists of one meniscus positive lens. Components II and III are made each of two lenses, one of which is positive and the other negative. Both negative lenses are turned towards the aperture diaphragm, located between the second and third components. The lenses of component III are cemented. The lenses of component II also can be cemented, which simplifies the assembling still more, increases the passage of light, and reduces the light dispersion of the objective. The cementing of the lenses of component II is possible, for example, for short-focus objectives used in narrow-film moving-picture cameras.

High quality of the image is assured by the proper computation and selection of the kinds of glass, thickness of the lenses, air intervals, and radii of curvature.

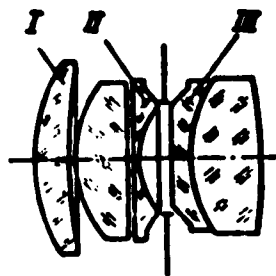
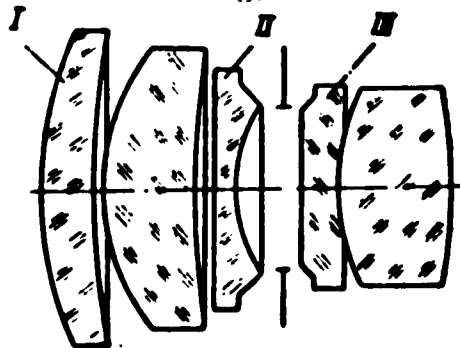


Fig. 1



Sketch by V. Ye. Sokolovskiy

The objective enables one to obtain a quality image for a frame 24 x 36 mm with  $f' = 50/2$  and  $f' = 100/2.5$  with insignificant vignetting of the edges of the margin.

On a narrow moving-picture film with focal distance of the objective 10—20 mm the relative aperture of the objective can be brought to 1 : 1.8 — 1 : 1.9.

Subject of the Invention

A five-lens objective with high  $f$  number with relative aperture 2—2.5, covering a fram 24 x 36 mm, with insignificant vignetting of the edges of the margin, which is distinguished by the fact that for the purpose of simplifying the design there was developed a new type of objective, consisting of five lenses, grouped in three components, consisting: first, of one meniscus positive lens, and second and third, of two lenses each, one of which is positive and the other negative, whereby the negative lenses are turned towards the aperture diaphragm, placed between the second and third components.



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